

REMARKS

Reconsideration and allowance are respectfully requested. Claims 1, 3-6, 11-12, 14-15, 17-20, 23 and 25 are pending. Claims 16, 21, 22 and 24 are cancelled without any disclaimer of the subject matter contained therein. Claim 25 is new. No new matter has been added.

Interview Summary

Applicants wish to thank the Examiner for his time during the interview of November 3, 2010. During the interview, the Examiner clarified his position on the finality of the Office Action.

Rejections under 35 U.S.C. § 102

1. Claims 1, 3-6, 12, 14-15 and 17-19 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,104,775 ("Tuy") which incorporates by reference U.S. Patent No. 6,097,784 ("Tuy '784"). Applicants traverse this rejection for the following reasons.

Claim 1 recites, *inter alia*, "rays are weighted as a function of corresponding position in the beam." (emphasis added.) At least this feature is not disclosed or suggested by Tuy.

Tuy discloses a 3D image reconstruction for helical partial cone beam scanners having a multiplicity function M_{λ} . "The multiplicity function M_{λ} is introduced to account for redundancy in the collected data." Col. 8, lines 12-13 of Tuy.

The Examiner relies on Col. 8, lines 12-13 of Tuy to teach the weighting of claim 1. However, the weighting of Tuy is not in any way related to the position of the rays in the beam. Rather, Tuy only defines a weighting that occurs based on the redundancy of rays.

On page 31 of the Office Action dated October 6, 2010, the Examiner relies on col. 14, lines 57-64, of Tuy '784 to teach the weighting of claim 1. Col. 14, lines 57-64, recites the following:

The multiplicity function is also defined to take into account on how much weight is given to the cone beam data. In a preferred embodiment, the weight is 1 if the position of the vertex is at the same level as the reconstruction point, and the weight goes to zero as the level of the position of the vertex of the cone goes a half-revolution away from the level of the reconstruction point. (emphasis added.)

As stated above the weighting of Tuy '784 is based on the position of the vertex of the beam. Consequently, if the vertex is over the reconstruction point, all of the rays in the beam are weighted as one. If the vertex is away from the reconstruction point, all of the rays in the beam become zero.

The weighting in Tuy '784 is different than being weighted as function of a position in the beam because, in Tuy '784, all positions of rays in a beam are weighted the same.

Therefore, Tuy fails to disclose or suggest the "rays are weighted as a function of corresponding position in the beam," of claim 1. Tuy fails to provide that the weighting is dependent on the position of the rays in the beam. Instead, Tuy provides that the weighting is dependent on the vertex of the cone.

Claims 3-6, 12, and 17-19 are patentable at least by virtue of their dependency on claim 1.

Claim 14 is a separate independent claim from claim 1, wherein each independent claim contains its own individual limitations. Each independent claim should be interpreted solely based upon limitations set forth therein. However, claim 14 is patentable for at least reasons somewhat similar to those set forth above regarding claim 1. Claim 15 is patentable at least by virtue of its dependency on claim 14.

Withdrawal of this rejection is requested.

Rejections under 35 U.S.C. § 103

1. Claims 20 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tuy as applied to claim 1 above, and further in view of U.S. Patent No. 6,529,575 ("Hsieh"). This rejection is respectfully traversed in that even assuming *arguendo* that Hsieh could be combined with Tuy, which Applicants do not admit, the combination fails to render even claim 1 obvious because Hsieh suffers from at least the same deficiencies as Tuy. Therefore, claims 20 and 23 are patentable over Tuy in view of Hsieh.

Withdrawal of this rejection is requested.

2. Claims 1, 3-5, 11, 14-15 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,285,733 ("Proksa") in view of "3D Cone-beam CT Reconstruction for Circular Trajectories" by Grass et al. ("Grass"). Applicants traverse this rejection for the following reasons.

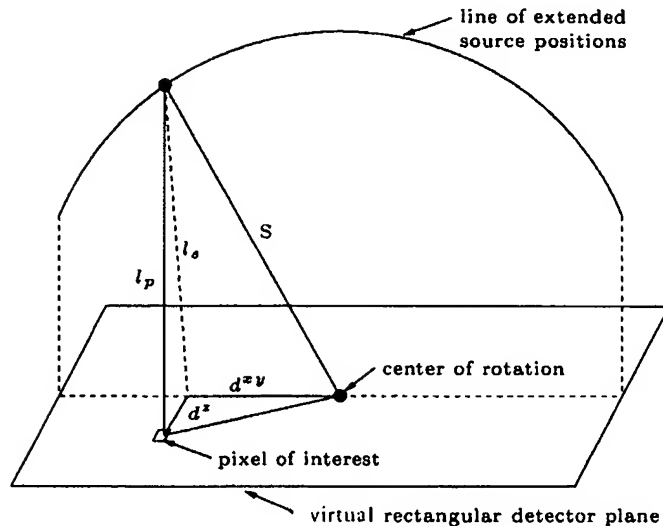
Claim 1 recites, *inter alia*, a "tending to zero for rays to detector rows towards an edge of the detector rows, and zero for rays to detector rows at the edge of the detector rows." (emphasis added). At least this feature is not disclosed or suggested by Proksa and Grass, alone or in combination (assuming they could be properly combined, which Applicants do not admit).

On page 11 of the Office Action dated October 6, 2010, the Examiner admits that Proksa fails to disclose the "weighting function," of claim 1. Instead, the Examiner relies on Grass.

Grass discloses a two-dimension cosine type weighting function as follows:

$$\cos(\theta(d^x, d^z)) = (l_s/l_p)$$

Figure 3, which illustrates l_s and l_p is provided below for the Examiner's convenience.



Therefore, as shown above l_s never equals zero. Therefore, the weighting function never weights a ray to zero.

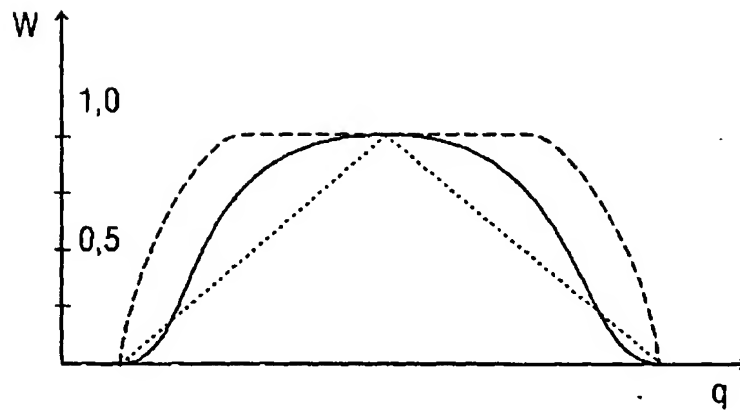
Consequently, Grass fails to provide the weighting "zero for rays to detector rows at an edge of the detector rows," as set forth in claim 1. By contrast, the weight is always greater than zero.

Pages 31-32 of the Office Action dated October 6, 2010 recite the following:

The Examiner notes that tending to zero is not a requirement to be zero, but simply to move in the direction of zero. As noted on[sic] in paragraph 20 on pages 7-8 of the specification of the instant application, the \cos^2 function is give[sic] as an example [sic] a function that tends to zero. The \cos^2 function does not reach zero unless the angle is + or - 90° which is unphysical since it represent a detector row at infinity.

However, the Examiner has failed to recognize that the \cos^2 function described in paragraph 20 is a function of a row number, not angle. FIG. 5 of the present application, which is provided below for the Examiner's convenience, illustrates an example function that is a function of a row number q .

FIG 5



As shown, it is possible to have a weight of zero.

Since Proksa and Grass, alone or in combination fail to disclose or suggest the “tending to zero for rays to detector rows towards an edge of the detector rows, and zero for rays to detector rows at the edge of the detector rows,” of claim 1, Proksa and Grass fail to render claim 1 obvious.

Claims 3-5, 18, and 19 are patentable at least by virtue of their dependency on claim 1.

Claim 14 is a separate independent claim from claim 1, wherein each independent claim contains its own individual limitations. Each independent claim should be interpreted solely based upon limitations set forth therein. However, claim 14 is patentable for at least reasons somewhat similar to those set forth above regarding claim 1. Claim 15 is patentable at least by virtue of its dependency on claim 14.

Withdrawal of this rejection is requested.

3. Claims 6 and 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Proksa in view of Grass as applied to claim 5 above, and further in

view of Bruder. This rejection is respectfully traversed in that even assuming arguendo that Proksa and Grass could be combined with Bruder, which Applicants do not admit, the combination fails to render even claim 1 obvious because Bruder suffers from at least the same deficiencies as Proksa and Grass. Therefore, claims 6 and 17 are patentable over Proksa in view of Grass and Bruder.

Withdrawal of this rejection is requested.

8. Claims 20 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Proksa in view of Grass as applied to claim 1 above, and further in view of Hsieh. This rejection is respectfully traversed in that even assuming arguendo that Proksa and Grass could be combined with Hsieh, which Applicants do not admit, the combination fails to render even claim 1 obvious because Hsieh suffers from at least the same deficiencies as Proksa and Grass. Therefore, claims 20 and 23 are patentable over Proksa in view of Grass and Hsieh.

Withdrawal of this rejection is requested.

Double Patenting Rejections

Claims 1, 4-6, 12, 19, 21, 22 and 24 stand rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,839,400 in view of Tuy. Claims 1, 4-6, 11, 12, and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,839,400 in view of Proksa and Grass.

Applicants have filed a terminal disclaimer with regards to U.S. Patent No. 6,839,400, thereby rendering these rejections moot.

New Claim 25

Claim 25 recites, *inter alia*, that "the weighting function is independent of a rotational position of a radiation source configured to emit the rays of the beam." At least this feature is not disclosed or suggested by the cited art. Therefore, allowance of claim 25 is requested.

CONCLUSION

Accordingly, in view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of claims 1, 3-6, 11-12, 14-15, 17-20, 23 and 25 in connection with the present application is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Donald J. Daley at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. §1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKY, & PIERCE, P.L.C.

By



Donald J. Daley, Reg. No. 34,313
Blair M. Hoyt, Reg. No. 56,205

P.O. Box 8910
Reston, Virginia 20195
(703) 668-8000

DJD/BMH:clc

1081834.1